

# On a Collection of Non-Marine Mollusca from Malaya in the Raffles Museum, Singapore, with an Appendix on Cave Shells

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In March 1935 the Director of the Raffles Museum invited me to identify a collection of non-marine Mollusca for this Museum, brought together on various occasions by members of the Staff and by individual travellers. I gladly accepted his suggestion, as it afforded me a welcome opportunity for studying the mollusc-fauna of the Malay Peninsula, a region with which I had only very few relations so far.

Part of the collection had been seen before by Mr. F. F. Laidlaw, of Uffculme, before it went to me. Mr. Laidlaw identified several of them more or less provisionally. In all cases where I adopted his nomenclature I have made mention of it in the publication. His experience in identifying Malayan species was a great help to me. Perhaps still more I am indebted to the courtesy and never-failing advice of Mr. J. R. le B. Tomlin, of St. Leonards-on-Sea, a fatherly mentor to all younger conchologists.

After identification the collection was returned to Singapore. Type specimens and a few duplicates were left to the Amsterdam Zoological Museum, a gesture for which we are very much obliged.

The drawings for the plates were made by a native artist of the Buitenzorg Zoological Museum after the actual specimens and with directions sent by me.

The following is a list in systematical sequence. Under each species is mentioned the original diagnosis and eventually such publications as refer to later special research, anatomical, systematical or faunistic.

*Hydrocena* (*Georissa*) *monterosatiana* (Godwin Austen & Nevill).

- 1879 GODWIN AUSTEN & NEVILL, Proc. Zool. Soc. London, p. 739, pl. 59, f. 6 (*Georissa*).
- 1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 316 (*Georissa*).
- 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1076 (*Georissa*).
- 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 346 (*Georissa*).
- 1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 146 (*Georissa*).
- 1902 SYKES, Journ. of Malac., Vol. 9, p. 62 (*Georissa*).
- 1903 SYKES, Proc. Zool. Soc. London, p. 199 (*Georissa*).

# NON-MARINE MOLLUSCA FROM MALAYA

1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 26

(*Georissa*).

1932 LAIDLAW, Bull. Raffles Mus., No. 7, p. 36 (*Georissa*).

Bukit Chintamani, Pahang

1 sp.

## *Leptopoma lowi* L. Pfeiffer.

1855 PFEIFFER, Proc. Zool. Soc. London, p. 210.

1867 MARTENS, Ostas. Landschn., p. 149.

1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 11.

1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 27.

Slaja Pagar, Perak River

3 sp.

## *Japonia garreli* (Souleyet).

1852 SOULEYET, Voy. Bonite, Zool. Vol. 2, p. 538, pl. 30, fig. 33-37

(*Cyclostoma*).

1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 409

(*Cyclophorus*).

1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 43.

1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 28.

Telom Valley, near Gunong Siku, Pahang,  $\pm$  4,500 feet,

March 1935

1 sp.

Neither in the original diagnosis nor in the description by Von Martens (Ostas. Landschn. 1867, p. 140), is mention made of periostracal hairs ornamenting the spiral ridges. Our specimen from the Telom Valley is almost destitute of hairs, but for a few sparse cilia on the first, second and fifth lirae which are rapidly falling off at the slightest touch, and I venture to suppose that Souleyet had before him shells in this condition. For the rest his description agrees quite well with my specimen.

## *Crossopoma albersi* (Pfeiffer).

1847 PFEIFFER, Zeitschr. Malak., Vol. 4, p. 151 (*Pterocyclos*).

1885 DE MORGAN, Le Naturaliste, p. 69 (*Cyclophorus regelspergeri*).

1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 400-401, pl. 8, fig. 3 (*Pterocyclus regelspergeri*).

1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 308 (*Spiraculum regelspergeri*).

1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1062 (*Pterocyclos*), p. 1063 (*Spiraculum regelspergeri*), p. 1067 (*Cyclophorus regelspergeri*).

1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 340 (*Pterocyclus regelspergeri*).

1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 162 (*Pterocyclus regelspergeri*).

1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 161 (*Pterocyclus*), p. 168 (*Pterocyclus regelspergeri*).

1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 30 (*Pterocyclus regelspergeri*).

Dindings

1<sup>st</sup> sp.

The species is recorded with certainty for North Sumatra. Its identity with *Crossopoma regelspergeri* greatly extends its area of distribution.

Mus. 19, 1949.

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*Cyclophorus perdix tuba* (Sowerby).

- 1842 SOWERBY, Proc. Zool. Soc. London, p. 83 (*Cyclostoma tuba*).  
 1867 MARTENS, Ostas. Landschn., p. 133 (*Cyclophorus tuba*), p. 136-138 (*Cyclophorus perdix*).  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 408 (*Cyclophorus tuba*).  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1065 (*Cyclophorus tuba*).  
 1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 161 (*Cyclophorus tuba*).  
 1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 131 (*Cyclophorus perdix*), p. 134 (*Cyclophorus tuba*).  
 1903 SYKES, Proc. Zool. Soc. London, p. 195 (*Cyclophorus tuba*).  
 1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 29 (*Cyclophorus* (*Salpingophorus*) *perdix*), p. 30 (*Cyclophorus* (*Salpingophorus*) *tuba*).

Mount Ophir, Johore, 14 August 1905 1 sp. juv.

Hill Gardens, Larut, Perak 1 sp.

Kuala Terla, Telom Valley, Pahang, 4,000-4,500 feet, March 1935 3 sp. (2 adults 1 juv.) The measurements of the adults are:—

max. diam. (incl. aperture) ..	38.7	31.8 mm.
min. diam. (incl. aperture) ..	27.6	23.7 mm.
height ..	25.6	20.8 mm.

In the nomenclature of the species I follow Rensch (Arch. Moll. Kunde, Vol. 66, 1934, p. 316; Id. Arch. Hydrobiol. Suppl. Bd. 12, 1934, p. 739 ff). All the specimens have the peculiar trumpet shaped dilatation of the ultimate whorl towards the aperture, just as in Sumatran specimens of which I have seen scores of individuals from various localities. The Malayan shells have a more acute keel reminiscent of *C. perdix borneensis* Metcalfe, the largest one from Kuala Terla being very sharp. This shell also possesses the undulating surface structure proper to the variety *pliciferus*.

*Cyclophorus perdix aquila* (Sowerby).

- 1843 SOWERBY, Thes. Conch. Vol. 1, p. 123, pl. 27, fig. 131 (*Cyclostoma aquilum*).  
 1867 MARTENS, Ostas. Landschn., p. 134 (*Cyclophorus aquila*).  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 408-409 (*Cyclophorus aquila*).  
 1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 124 (*Cyclophorus aquilus*).  
 1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 29 (*Cyclophorus* (*Salpingophorus*) *aquilus* sic!).

Aor Island, 14 June 1912 1 sp.

The specimen is rather high. It has only little coloration, one broad and one narrow spiral band below the periphery, and a few insignificant brown spots along the suture of the penultimate whorl. There is no trace of the pattern of zig-zag markings, so common in other members of the *perdix* tribe.

*Cyclophorus malayanus* (Benson).

- 1852 BENSON, Ann. Mag. Nat. Hist. (2), Vol. 10, p. 269 (*Cyclostoma*).  
 1867 MARTENS, Ostas. Landschn., p. 133.  
 1872 STOLICZKA, Journ. As. Soc. Bengal, Vol. 41, p. 262, pl. 10, fig. 1-5.  
 1879 CROSSE, Journ. de Conch., Vol. 27, p. 338.  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 410-411.  
 1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 309.  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1065.  
 1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 130.  
 1903 SYKES, Proc. Zool. Soc. London, p. 195.  
 1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 29.

Dindings

2 sp.

Rensch (Arch. Moll. Kunde, Vol. 66, 1934, p. 317) suggested that *Cyclophorus malayanus* should be classified as a subspecies of *C. perdis*, like our preceding species, *tuba* and *borneensis*, but as yet this cannot be accepted.

*Cyclophorus semisulcatus* (Sowerby).

- 1843 SOWERBY, Thes. Conch., Vol. 1, p. 124, pl. 25, fig. 99 (*Cyclostoma*).  
 1867 MARTENS, Ostas. Landschn., p. 130.  
 1879 CROSSE, Journ. de Conch., Vol. 27, p. 338.  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 410.  
 1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 309.  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1066.  
 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 341.  
 1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 161.  
 1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 103-104.  
 1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 29.

Genting Sempak

1 sp.

*Cyclotus (Opisthoporus) rostellatus* (Pfeiffer).

- 1851 PFEIFFER, Zeitschr. f. Malak., Vol. 8, p. 8 (*Cyclostoma rostellatum*).  
 1867 MARTENS, Ostas. Landschn., p. 113 (*Opisthoporus*).  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 399 (*Opisthoporus*).  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1059.  
 1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 217.  
 1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 32 (*Opisthoporus*).

Tinggi Island, July 1915

6 sp.

If the remark of Stoliczka (Journ. As. Soc. Bengal, Vol. 41, 1872, p. 266) that the shells of male specimens of *Opisthoporus penangensis* reach the adult stage at a somewhat smaller size than the females, proves to be of wider application, it might perhaps involve that *Cyclotus rostellatus* and *C. dautzenbergi* Sykes (Journ. of Malac. Vol. 9, 1902, p. 23; Ibid. p. 61, pl. 3, fig. 5, 6) which seem to differ only in size, form the male and female phase of one species.



Of the above mentioned series from Tinggi two shells are not quite adult. The other four measure resp. 14.8, 13.3, 12.5 and 11.9 mm. max. diam. peristome included. There is no possibility of separating the sexes as the animals are not preserved.

*Cyclotus umbraticus* n.sp. Pl. 1, fig. 1.

Shell depressed, whorls nearly all in one plane, apex hardly projecting. Ground colour yellowish-brown above the periphery, somewhat darker brown below it. Along the periphery there runs a narrow band, whitish or golden yellow. Parallel with it and below it there is a narrow dark-brown band. Above the periphery the shell is ornamented with irregular diffuse blotches or zig-zag stripes of dark-brown colour. Below the periphery this same ornamentation, still more dilute, may be present also; in other cases the surface is plain here. Apex of the same colour as the rest of the shell.

Initial whorls smooth, following ones striped, according to lines of growth. From about whorl  $2\frac{1}{2}$ -3 onward a peculiar rugosity in the surface appears, sometimes composed of anastomosing wrinkles, sometimes elegantly arranged in chevrons. Umbilicus wide showing all previous whorls.

Ultimate whorl descending towards aperture. Interior of aperture white.

Aperture circular, oblique. Peristome duplicate, white. Outer rim reflected and with a short notch at the point where the aperture reaches the penultimate whorl. Along this notch the outer rim of the peristome is folded, so as to make an incomplete funnel (as in species of *Pterocyclus*) in the largest shell.

Dimensions	a	b	c	d	e	f	g	h
Max. diam.	26.2	23.0	18.8	24.0	22.2	20.8	17.2	15.6
Min. diam.	20.7	17.0	14.0	18.0	16.9	15.8	13.0	11.4
Height	12.0	10.0	8.3	10.0	10.0	9.5	9.5	7.0

The first one of the series (no. a) is the type. It is preserved in the Amsterdam Zoological Museum.

Habitat: Maxwell's Hill, 700 feet, 23 April 1904 (nos. a, b, c).

Maxwell's Hill, 2,200 feet, 20 April, 1904 (nos. d, e, f).

Gunong Brinchang, Pahang, 4,500-5,500 feet, March 1935 (nos. g, h).

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The species is related to *Cyclotus amabilis* Fulton, from North Borneo, *C. variegatus* Sow. from the Philippines and the Sulu Archipelago, *C. palawanicus* Smith from Palawan, *C. nigrispinus* P. & F. Sarasin from North Celebes and *C. auriculatus* Kobelt, from the Philippines, but it is sufficiently distinct to stand as a new species.

## *Rhiostoma macalpine-woodsii* Laidlaw.

1939 LAIDLAW, Journ. of Conch., Vol. 21, p. 166.

Sungei Siput, Perak

2 sp.

The shells agree with the diagnosis and figure of Laidlaw. This author has also seen the two above mentioned specimens from Sungei Siput, and he feels sure that they are quite distinct from *Rh. jousseaumei* De Morgan. I accept this opinion on his authority.

## *Schistoloma sumatranum* (Dohrn).

1881 DOHRN, Nachr. Blatt, Vol. 13, p. 65 (*Coptocheilus*).

1872 STOLICZKA, Journ. As. Soc. Bengal, Vol. 41, p. 268, pl. 10, fig. 13 (*Megalomastoma sectilabrum*).

1879 CROSSE, Journ. de Conch., Vol. 27, p. 339 (*Megalomastoma sectilabrum*).

1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 412-413 (*Megalomastoma sectilabrum*).

1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 346 (*Coptocheilus sectilabrum*).

1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 162 (*Coptocheilus rectilabrum* sic!).

1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 281.

1903 FULTON, Journ. of Malac., Vol. 10, p. 102 (*Coptocheilus perakensis*).

1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 33 (*perakense*).

Kuala Legap, Plus Valley, Perak 16 sp.

Maxwell's Hill, Perak, 3,000-4,000 feet, August 1908 and 3,400 feet, 14 April 1908 6 sp.

Selangor, 1896, leg. H. N. Ridley 1 sp.

Gunong Kledang, Perak, 2,646 feet, November, 1916 4 sp.

Taiping Perak 3 sp.

Dusun Tua, Selangor, 1921 4 sp.

Of the three closely related species: *Schistoloma sectilabre* (Gould), *sumatranum* (Dohrn) and *perakense* (Fulton) the first bears "a slight fissure or canal across posteriorly", as is also demonstrated by Gould's figure (1844, Boston Journ. Nat. Hist. Vol. 4, p. 459, pl. 24, fig. 10).

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In the diagnoses of the two others no mention is made of such a notch, and it is certainly safe to assume that it is absent, the peristome in these being continuous.

A comparison of the characteristics of *S. sumatranum* (after Kobelt, 1902) and *S. perakense* (after the original diagnosis, l.c.) is as follows:—

<i>sumatranum</i>	<i>perakense</i>
1. eng genabelt	narrowly perforate
2. getürmt	elongately-conic
3. ziemlich festwandig	moderately solid
4. gestreift	obliquely striated
5. rötlich, periostracum olivengrün	reddish brown
6. Naht einfach, eingedrückt	last two whorls margined at the suture
7. 7-8 gewölbte Windungen	whorls $7\frac{1}{2}$ , slightly convex
8. letzte schmaler als die vorletzte, vorn anstei- gend, unten abgerundet	.....
9. Mündung fast kreisrund	aperture circular, brown within
10. Mundrand weiss, leicht doppelt	peristome subduplicate, ex- panded, whitish
11. innerer zusammenhäng- end, links kaum ein- geschnitten	margins connected by a raised callus, somewhat angular at upper columel- lar portion
12. äusserer an der vorletzten Windung kurz unter- brochen, flach ausge- breitet, links zurückwei- chend, am Einschnitt verdickt, im Winkel ausgebreitet	
13. H. 19-24 mm. Diam. 8-9 mm.	H. 23 mm. Diam. (incl. peristome) 11 mm.
14. ....	operculum normal

From the foregoing table it is evident that there is practically no difference between the two species, the characteristics, though unequal in words, expressing similar qualities. After examining 94 specimens from 12 different localities in Sumatra and Malaya (among these a paratype of *S. perakense* Fulton) I cannot find morphological differences in the habitus which could be the expression of geographical separation. Therefore I find no reason to distinguish geographic subspecies or varieties and I include *S. perakense* in the synonymy of *S. sumatranum*.

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## *Rhaphaulus perakensis* Smith.

- 1898 SMITH, Proc. Malac. Soc. London, Vol. 3, p. 17, fig. 1, 2.  
1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 276.  
1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 32-33.

Kuala Kenering, leg. C. Wray	4 sp.
Maxwell's Hill, Perak	2 sp.
Dusun Tua, Selangor, 1921	1 sp.

## *Pupina lowi* De Morgan.

- 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 414, pl. 7, ng. 3.  
1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 345.  
1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 317.  
1903 SYKES, Proc. Zool. Soc. London, p. 197.  
1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 34.

Larut Mills, Perak	1 sp. (det. F. F. Laidlaw)
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The characters distinguishing this species from *Pupina arula* Benson will be discussed under that species.

## *Pupina aureola* Stoliczka.

- 1872 STOLICZKA, Journ. As. Soc. Bengal, Vol. 41, p. 267, pl. 10, fig. 11, 12.  
1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 414.  
1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1072.  
1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 345.  
1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 162.  
1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 307.  
1903 SYKES, Proc. Zool. Soc. London, p. 197.  
1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 34.

Gunong Pulai, Johore	3 sp.
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## *Pupina tchechelensis* De Morgan.

- 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 414-415, pl. 7, fig. 4.  
1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 346.  
1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 323.  
1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 34.

Sungei Siput, Perak	2 sp. (det. F. F. Laidlaw)
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## *Pupina arula* Benson.

- 1856 BENSON, Ann. Mag. Nat. Hist. (2), Vol. 17, p. 230.  
1879 CROSSE, Journ. de Conch., Vol. 27, p. 340.  
1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 413.  
1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 314.  
1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1072.  
1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 345.  
1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 307.

Cameron Highlands, Pahang	1 sp.
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*Pupina arula* Benson var. *perakensis* Möllendorff.

1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 345.

1902 KOBELT, Cyclophoridae, in: Tierreich, Lief. 16, p. 307 (*Pupina arula*).

1928 LAIDLAW, Journ. Mal. Branch Roy. As. Soc., Vol. 6, p. 34.

Telom Valley, near Gunong Siku, Pahang, 4,500 feet, March, 1935 3 sp.

Kuala Legap, Plus Valley, Perak 1 sp.

Although *Pupina arula* Benson and *P. lowi* De Morgan are doubtless two substantial species it is difficult to put their distinguishing characters into words.

The suture of *P. lowi* is shallower, than that of *P. arula*. Furthermore the latter species is finely striated longitudinally, a feature not observed in *P. lowi*. Pfeiffer (Nov. Conch. Vol. 2, 1860, p. 141, pl. 37, fig. 7-9) mentioned the presence of a faint basal furrow in *P. arula*, but a similar structure occurs also in *P. lowi*. In the 5 specimens of *P. arula* and *P. a. perakensis* which I was able to examine, this basal furrow is of a variable nature, some shells being distinctly, some only very faintly grooved.

*Bithynia pulchella* (Benson).

1836 BENSON, Journ. As. Soc. Bengal, Vol. 5, p. 746 (*Paludina*).

Batu Caves, Dark Cave, Selangor, December 19, 1929, leg. E. Seimund 76 sp.

The only other species of *Bithynia* occurring in the region is *B. kintana* De Morgan, but this is a larger form, increasing in size more rapidly than *B. pulchella*.

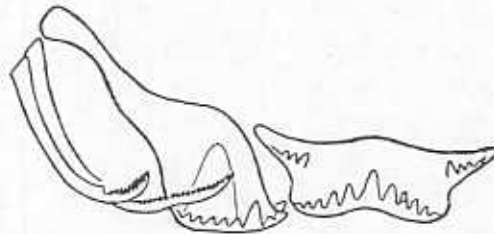


Fig. 1. Half row of teeth from radula of *Bithynia pulchella* (Benson) Batu Caves, Selangor.

From one of the specimens I prepared a radula. A figure of half a row of teeth is reproduced here (Fig. 1).

*Thiara tuberculata* (Müller).

- 1774 MÜLLER, Hist. Verm., Vol. 2, p. 191 (*Nerita*).  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 421  
 (*Melanoides*).  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1083  
 (*Melania*).  
 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 347 [*Melania*  
 (*Striatella*)].

Singapore Island, February 6, 1927 30 sp. (det. F. F.  
 Laidlaw).

*Semperula schneideri* (Simroth).

- 1894 SIMROTH, Sitz. Ber. naturf. Ges. Leipzig, Vol. 19-21, p. 7  
 (*Vaginula*).  
 1925 HOFFMANN, Jenaische Zeitschr. Naturw. Vol. 61, p. 257-258  
 (*siamensis* var. *schneideri*).  
 1925 GRIMPE & HOFFMANN, Zeitschr. wiss. Zool., Vol. 124, p. 47  
 (*Semperula* (*siamensis* Martens var.) *schneideri*).

Telom Valley, near Gunong Siku, Pahang,  $\pm$  4,500 feet,  
 March, 1935 1 sp.

The collection contained another *Semperula*, very close to  
*S. schneideri* indeed, differing in the construction of the penis,  
 which is not, as in *S. schneideri*, like a little cock's comb, but more  
 like a terse cactus with irregular excrescences. I must leave it  
 undecided whether it is another species or merely a variation of  
 the above mentioned species.

*Hypselostoma terae* Tomlin.

- 1939 TOMLIN, Journ. of Conch., Vol. 21, p. 146-147, pl. 12, fig. 2.  
 Bukit Chintamani 2 sp. (paratypes)

*Hypselostoma piconis* n.sp. Pl. 2.

Shell moderately conical, the spire about as high as the  
 diameter of the last whorl (previous to the trumpet).

Last whorl produced into a trumpet-shaped aperture, free  
 from the spire, running forward and a little obliquely upward.  
 The peristome and the vertical axis make an angle of about 45°.

Dark brown, thin little transparent, somewhat glossy.  
 Surface finely striated in spiral direction, with a cross-striation  
 parallel with the lines of growth.

Whorls 4, convex, separated by a well impressed suture.  
 The last whorl bears a conspicuous, although not sharp,  
 peripheral keel. This keel is rendered even more conspicuous by  
 slight impressions in the shell above and below it, which cause  
 it to stand out a little more prominently.

The peripheral keel is continued on the free part of the  
 aperture, becoming more cord-like on this part of the shell.

The base of the shell is angular around the widely open umbilicus. This edge is also continued as a ridge on the free part of the ultimate whorl. Together with the two other ridges, originating from the suture and about halfway between the suture and the base of the columellar side, these ridges give the trumpet a more or less quadrangular aspect.

Top mamillar. Peristome continuous. Aperture indistinctly tetragonal, provided with 5 teeth within. Angular and parietal lamella are combined into one lobed tooth. Besides there are one columellar lamella and two palatal plicae. Of the latter, the lower one faces the parietal + angular tooth, the upper one is opposite the columellar tooth. In the corner between the angular + parietal and the columellar lamella there is a smaller tooth, presumably the supra columellar lamella. Teeth not puckered.

Dimensions: Max. diam. (including aperture) 3.8, min. diam. 2.4, height 1.8 mm.

Max. diam. (including aperture) 3.7, min. diam. 2.3, height (incomplete).

Habitat: Sungei Siput, Perak 2 sp.

The first specimen is the type. Together with the paratype it is preserved in the Amsterdam Zoological Museum. Both shells were collected dead. They are obviously very fragile and, although fresh, in not too good a condition.

The nearest relatives of this species are *Hypselostoma tubiferum* (Benson) as to the arrangement of the teeth and *H. annamiticum* Möllendorff as to the general shape, except the tubiferous portion of the ultimate whorl which has only a very short free part. *Hypselostoma piconis* is so distinct from any of the known species of this genus, that there is no doubt we have to do with a new species.

*Gyliotrachela hungerfordiana* (Möllendorff).

1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 337, pl. 30, fig. 7, 7-a (*Hypselostoma*).

1902 SYKES, Journ. of Malac., Vol. 9, p. 61 (*Hypselostoma*).

Bukit Chintamani, Pahang 2 sp.

*Gyliotrachela depressispira* n.sp. Plate 3.

Shell very low, conical, almost flat, the 1-1½ first whorl projecting only very little from the rest of the spire. Last whorl produced into a trumpet-shaped aperture, free from the spire, first running forward, afterwards ascending and facing upwards in an almost horizontal plane, somewhat like *Hypselostoma tubiferum* (Benson).

Dark brown, thin, little transparent, somewhat glossy. Surface minutely granular. Striate according to lines of growth. Sometimes the striae are placed so regularly that they can be mistaken for a pattern of radiate sculpture lines.

Whorls 3-4, convex, separated by a much impressed suture. On the last whorl there is a shallow spiral groove about midway between the suture and the periphery, making the keel standing out more prominently. The peripheral keel is continued on the free part of the last whorl and becomes more cord-like towards the aperture. At the base of the shell there runs another well-defined keel along the widely open umbilicus. This keel is also continued on the free part of the ultimate whorl like a little raised cord. Together with the peripheral keel these sharp edges render the trumpet more or less quadrangular in aspect.

Top a little projecting, mamillar. Aperture indistinctly tetragonal, provided with 17 teeth within (not all visible in the figure), of which four large ones form a cross. All teeth are minutely puckered. Angular and parietal teeth free along their whole extent, although implanted on the same socket.

Peristome continuous, very fragile (therefore the outer margin in the figure shows signs of damage in a few places).

Dimensions:

Max. diam. (including peristome)	3.7	3.4	3.3 mm.
Min. diam.	2.6	2.6	2.4 mm.
Height of shell	1.5	1.5	1.6 mm.
Height of shell (incl. aperture)	1.7	2.0	1.8 mm.

The first specimen is the type. Together with the second one (paratype) it is preserved in the Amsterdam Zoological Museum.

Habitat: Bukit Chintamani, Pahang

3 sp.

The species is close to *Gylotrachela hungerfordiana* (Möllerndorff), but it differs in the following characters:—

1. The spire is lower: 1.6 mm. on max. diam of 3.3 mm. in *depressispira* against 2.5 mm. on max. diam. of 3.0 mm. in *hungerfordiana*.
2. The free part of the last whorl ascends vertically (not obliquely as in *hungerfordiana*), the aperture lying in a horizontal plane.
3. The aperture bears more teeth in *depressispira*.

✓ *Phaedusa orites* (Laidlaw).

1931 LAIDLAW, Journ. of Conch., Vol. 19, p. 163 (*Clausilia*).

Sungei Abu, Cameron Highlands, May 25, 1933, 4,500 feet (paratype) (det. F. F. Laidlaw) 1 sp.

*Phaedusa pahangensis* (Laidlaw).

1929 LAIDLAW, Proc. Malac. Soc. London, Vol. 18, p. 262-263, fig. 3  
(*Clausilia*).

Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet,  
March 1935 1 sp.

Telom Valley, near Gunong Siku, Pahang, 4,500 feet,  
March 1935 11 sp.

Gunong Brinchang, Pahang, 4,500-5,500 feet, March  
1935 1 sp.

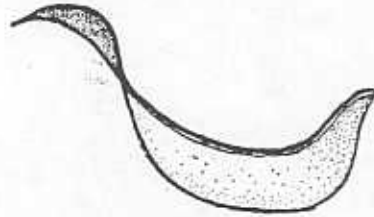


Fig. 2. *Phaedusa pahangensis* (Laidlaw) Telom Valley, near Gunong Siku, Pahang. Clausilium  $\times 14$ .

A clausilium prepared from a specimen of the second set is reproduced in fig. 2.

*Phaedusa penangensis* (Stoliczka).

1873 STOLICZKA, Journ. As. Soc. Bengal, Vol. 42, p. 27, pl. 2, fig. 4-6,  
15-17 (*Clausilia*).

1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 391.

1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1055  
(*Clausilia*).

1902 COLLINGE, Journ. of Malac., Vol. 9, p. 84 (*Clausilia*).

1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 161.

1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 212 (*Clausilia*).

Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet,  
March 1935 2 sp.

Gunong Brinchang, Pahang, 4,500-5,500 feet March  
1935 2 sp.

*Phaedusa kelantanensis* (Sykes).

1902 SYKES, Journ. of Malac., Vol. 9, p. 22 and p. 61, pl. 3, fig. 1  
(*Clausilia*).

1903 SYKES, Fasc. Mal. Zool., Part 2, p. 212-213 (*Clausilia*).

Four miles from Genting Sempak Hill Station, 1926, leg.  
C. Dover, on bark in damp forest (det. A. J. Peile) 1 sp.



- on, Vol. 18, p. 262-263, fig. 3  
 hang, 4,000-5,000 feet, 1 sp.  
 u, Pahang, 4,500 feet, 11 sp.  
 500-5,500 feet, March 1 sp.



- ) Telom Valley, near Gunong 14.  
 specimen of the second set

- l, Vol. 42, p. 27, pl. 2, fig. 4-6,  
 nce, Vol. 10, p. 391.  
 N.S.W. (2), Vol. 3, p. 1055  
 . 9, p. 84 (*Clausilia*).  
 34, p. 161.  
 : 2, p. 212 (*Clausilia*).  
 hang, 4,000-5,000 feet, 2 sp.  
 ,500-5,500 feet March 2 sp.

- p. 22 and p. 61, pl. 3, fig. 1  
 , p. 212-213 (*Clausilia*).  
 : Hill Station, 1926, leg.  
 : (det. A. J. Peile) 1 sp.

BULL. RAFFLES

**Prosopeas tchehelense (De Morgan).**

- 1885 DE MORGAN, Le Naturaliste, p. 69 (*Stenogyra*).  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 388-389, pl. 6, fig. 7 (*Stenogyra*).  
 1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 304-305 [*Stenogyra (Subulina)*].  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1051 (*Stenogyra*).  
 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 337.  
 1902 COLLINGE, Journ. of Malac., Vol. 9, p. 83.  
 1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 161.  
 1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 212.  
 1922 LINDHOLM, Ann. Mus. Zool. Acad. Sci. Russ. Petrograd, Vol. 23, p. 280-282 (*troglydites*).  
 1929 GHOSH, Journ. Fed. Mal. States Mus., Vol. 14, p. 336-337, fig. 4 (*Opeas dimorpha*).  
 1932 LAIDLAW, Bull. Raffles Mus. No. 7, p. 39.  
 ~ Batu Caves, Dark Cave, swarming on bats' guano in minor caverns, January 2, 1916 5 sp.  
 ~ Batu Caves, taken outside cave on moss rock, March 22, 1928 11 sp.  
 ~ Batu Caves, taken inside cave, December 19, 1928 10 sp.  
 ~ Batu Caves, December 1928, leg. E. Seimund 10 sp.  
 ~ Batu Caves, September 15, 1930, leg. E. Seimund 6 sp.  
 ~ Gunong Brinchang, Pahang, 4,500-5,500 feet, March 1935 1 sp.

Lindholm's *Prosopeas troglodytes* is certainly synonymous with *P. tchehelense*. His diagnosis is just as well relevant to shells of *P. tchehelense*. Of the distinguishing characters: the lighter colour, the presence of an angulation at the last whorl, and the smoothness of  $2\frac{1}{2}$  instead of  $1\frac{1}{2}$  initial whorls not one is conclusive, but all are gradations of qualities already found in *P. tchehelense*.

**Prosopeas turricula (Martens).**

- 1860 MARTENS, Proc. Zool. Soc. London, p. 9 (*Stenogyra*).  
 1867 MARTENS, Ostas. Landschn., p. 82, pl. 22, fig. 7 (*Stenogyra*).  
 Batu Caves, taken outside cave on moss rock, March 22, 1928 4 sp.  
 Batu Caves, September 15, 1930, leg. E. Seimund 2 sp.

**Prosopeas anceyi Pilsbry.**

- 1906 PILSBRY, Man. of Conch. (2), Vol. 18, p. 33, pl. 6, fig. 72, 73.  
 Batu Caves, September 15, 1930, leg. E. Seimund 1 sp.

The species was only known from Bac-Kan, Tonkin, before, but it agrees so well with the description and with the (rather poor) figure that I do not hesitate in assigning it to this species.

MUS. 19, 1949.

[ 63 ]

*Subulina octona* (Bruguière).

- 1789 BRUGUIÈRE, *Encycl. Méth. Vers* (1), p. 325 (*Bulinus*).  
 1902 MÖLLENDORFF, *Nachr. Blatt*, Vol. 34, p. 161.  
 1902 SYKES, *Journ. of Malac.*, Vol. 9, p. 61.  
 1922 LINDHOLM, *Ann. Mus. Zool. Acad. Sci. Russ. Petrograd*, Vol. 23, p. 280.  
 1929 GHOSH, *Journ. Fed. Mal. States Mus.*, Vol. 14, p. 335-336, fig. 3 (*Opeas doveri*).  
 1932 LAIDLAW, *Bull. Raffles Mus.* No. 7, p. 39.  
 Batu Caves, taken outside cave on moss rock, March 22, 1928 2 sp.  
 Batu Caves, September 15, 1930, leg. E. Seimund 19 sp.  
 Kuala Lumpur, October 18, 1931, leg. H. M. Pendlebury 54 sp.

*Opeas gracile* (Hutton).

- 1834 HUTTON, *Journ. As. Soc. Bengal*, Vol. 3, p. 84 (*Bulinus*).  
 1867 MARTENS, *Ostas. Landschn.*, p. 375-376 (*Stenogyra*).  
 1885 DE MORGAN, *Bull. Soc. Zool. France*, Vol. 10, p. 389-390 (*Stenogyra*).  
 1887 MÖLLENDORFF, *Journ. As. Soc. Bengal*, Vol. 55, p. 304 (*Stenogyra*).  
 1888 TENISON WOODS, *Proc. Linn. Soc. N.S.W.* (2), Vol. 3, p. 1051 (*Stenogyra*).  
 1891 MÖLLENDORFF, *Proc. Zool. Soc. London*, p. 337.  
 1902 MÖLLENDORFF, *Nachr. Blatt*, Vol. 34, p. 161.  
 1932 LAIDLAW, *Bull. Raffles Mus.* No. 7, p. 39.  
 Batu Caves, September 15, 1930, leg. E. Seimund 1 sp.

*Curvella* sp.

Some juvenile shells, probably belonging to two species, a slender and a stout one, are too young to venture an identification. They are certainly different from *Curvella jousseaumei* (De Morgan) and may represent unknown species. But as only the initial stages are known, it seems not advisable to introduce two new species on so scanty information.

Gunong Brinchang, Pahang, 4,500-5,500 feet, March 1935.

*Philmycus pictus* Stoliczka.

- 1873 STOLICZKA, *Journ. As. Soc. Bengal*, Vol. 42, p. 30-31, pl. 3, fig. 9-14.  
 1885 DE MORGAN, *Bull. Soc. Zool. France*, Vol. 10, p. 371.  
 Telom Valley, near Gunong Siku, Pahang, 4,500 feet, March, 1935 2 sp.

*Kaliella doliolum* (Pfeiffer).

- 1846 PFEIFFER, *Proc. Zool. Soc. London*, p. 41 (*Helix*).  
 1932 LAIDLAW, *Bull. Raffles Mus.* No. 7, p. 40.  
 Batu Caves, Selangor, September 15, 1930, leg. E. Seimund 5 sp.

The species has been recorded already—although with an interrogation-mark—from the Batu Caves by F. F. Laidlaw (l.c.).

*Sarika resplendens* (Philippi).

- 1846 PHILIPPI, Zeitschr. f. Malak., Vol. 3, p. 192 (*Helix*).  
 1897 DALL, The Nautilus, Vol. 11, p. 37 (*Macrochlamys*).  
 1902 COLLINGE, Journ. of Malac., Vol. 9, p. 77 (*Macrochlamys*).  
 1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 209 (*Macrochlamys*).  
 1907 GODWIN AUSTEN, Fauna Brit. India, Testacellidæ & Zonitidæ, p. 277-278.

Maxwell's Hill, Perak, 3,600 feet, April 12, 1904	1 sp.
Cameron Highlands	1 sp.
Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet, March 1935	3 sp.
Telom Valley, near Gunong Siku, Pahang, 4,500 feet, March 1935	6 sp.
Gunong Brinchang, Pahang 4,500-5,500 feet, March 1935	8 sp.

*Trochomorpha timorensis* Martens.

- 1867 MARTENS, Ostas. Landschn., p. 248, pl. 13, fig. 6.  
 1873 STOLICZKA, Journ. As. Soc. Bengal, Vol. 42, p. 22, pl. 1, fig. 17, pl. 2, fig. 10-12.  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 383.  
 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 334.  
 1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 210.

Kuala Legap, Plus Valley, Perak, March 1933, leg. M. W. F. Tweedie 5 sp.

The species is not uncommon in the region and has been recorded from several stations in the Malay Peninsula.

*Trochomorpha bicolor* Martens.

- 1864 MARTENS, Monatsber. Akad. Wiss. Berlin, p. 267.  
 1867 MARTENS, Ostas. Landschn., p. 252, pl. 13, fig. 2.

Tioman Island, July 1915 5 sp.

Batu Caves, Selangor, October, 1930, leg. E. Seimund 3 sp.

The specimens of the second locality are the best preserved. They agree in every respect with shells of *Trochomorpha bicolor* from Borneo, Sumatra and Java, as represented in the Zoological Museum of Amsterdam.

It is not very clear from the diagnosis of *Helix castra* Benson (Ann. Mag. Nat. Hist. (2), Vol. 10, 1852, p. 349) discussed and figured by Stoliczka (Journ. As. Soc. Bengal, Vol. 42, 1873, p. 21, pl. 1, fig. 14-16) if this species is to be assimilated with *Tr. bicolor*. Should it prove to be so, then Benson's name, having priority, should replace Martens' name. *Trochomorpha bicolor* is known to occur in Borneo, Sumatra, Mentawai, Java, Bali, Lombok, Soembawa, Flores, Ceram and Obi Id.

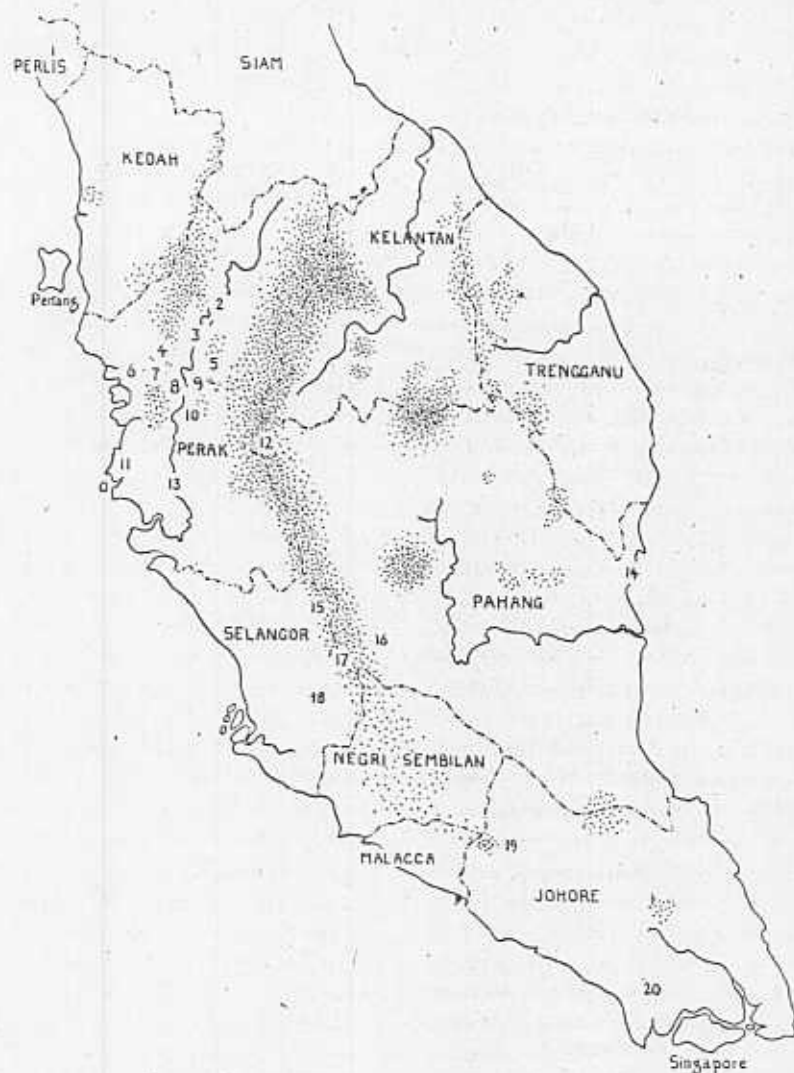


Fig. 3. The Malay Peninsula showing localities where molluscs were collected. Stippling indicates mountainous areas. 1, Gua Bintang; 2, Kuala Kenering; 3, Kota Tampan; 4, Larut Hills; 5, Pina Valley; 6, Taiping; 7, Maxwell's Hill; 8, Gunong Pondok; 9, Sungai Siput; 10, Gunong Kledang; 11, Dindings; 12, Cameron Highlands; 13, Perak River; 14, Kuantan; 15, Bukit Kutu; 16, Bukit Chintamani; 17, Genting Sempak; 18, Kuala Lumpur; 19, Mount Ophir; 20, Gunong Pulai.

Telom Valley, and Gunong Brinchang are localities in the Cameron Highlands (12). Dusun Tua and Batu Caves are near Kuala Lumpur. Gapis is a little south of Sungai Siput (9). Tioman, Tinggi and Aor are islands off the coast of Johore and South Pahang.

# NON-MARINE MOLLUSCA FROM MALAYA

## *Pseudoplecta bijuga* (Stoliczka).

- 1873 STOLICZKA, Journ. As. Soc. Bengal, Vol. 42, p. 14-16, pl. 1, fig. 4-7, pl. 2, fig. 16-18 (*Rotula*).  
 1879 CROSSE, Journ. de Conch., Vol. 27, p. 336 [*Nanina* (*Rotula*)].  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 378 (*Rotularia*).  
 1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 302 (*Euplecta*).  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1025 (*Nanina*).  
 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 332 (*Euplecta*).  
 1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 161 (*Otesia*).  
 1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 208 (*Euplecta*).  
 1932 LAIDLAW, Proc. Malac. Soc. London, Vol. 20, p. 91-93, fig. 7, 8.

Kedah, Peak 4 sp.  
 Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet, 9 sp.  
 March 1935  
 Telom Valley, near Gunong Siku, Pahang, 4,500 feet, 10 sp.  
 March 1935  
 Gunong Brinchang, Pahang, 4,500-5,500 feet, March 21 sp.  
 1935

## *Pangania lowi* (De Morgan).

- 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 373-374, pl. 5, fig. 3 (*Helicarion*).  
 1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 207-208, pl. 12, fig. 14-16 (*Nilgiria*).  
 1932 LAIDLAW, Proc. Malac. Soc. London, Vol. 20, p. 81-84, fig. 1-4.  
 Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet, 20 sp.  
 March 1935  
 Telom Valley, near Gunong Siku, Pahang, 4,500 feet, 13 sp.  
 March 1935  
 Gunong Brinchang, Pahang, 4,500-5,500 feet, March 7 sp.  
 1935

## *Macrochlamys strophoides* Stoliczka.

- 1873 STOLICZKA, Journ. As. Soc. Bengal, Vol. 42, p. 17, pl. 1, fig. 9, pl. 2, fig. 19-20.  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 375.  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1019 (*Nanina*).  
 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 332.  
 1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 136.  
 Telom Valley, near Gunong Siku, Pahang, 4,500 feet, 2 sp.  
 March 1935  
 Gunong Brinchang, Pahang, 4,500-5,500 feet, March 2 sp.  
 1935

## *Platymma tweediei* Tomlin.

- 1938 TOMLIN, Proc. Malac. Soc. London, Vol. 23, p. 116-117, pl. 14-A.  
 Kuala Terla, Telom Valley, Pahang, March 10, 1935 3 sp.  
 (2 ad., 1 immature)



The species was described (Tomlin, l.c.) after a shell from the British Museum. A paratype from the same lot as the three specimens now before me is in Mr. Tomlin's collection.

The adult specimens of the above mentioned set measure;

high	..	42.3	44.0 mm.
max. diam.	..	72.6	79.0 mm.
min. diam.	..	55.5	60.6 mm.
no. of whorls		not quite 6	not quite 6

The immature specimen was preserved with the animal. The soft parts were sent to Mr. F. F. Laidlaw who was so kind as to supply me with the following information on anatomical details:

"Externally the animal closely resembles that described by Godwin Austen for *Hemiplecta floweri* Smith (Godwin Austen, Proc. Malac. Soc. London, Vol. 4, 1900, p. 31-35, pl. 4, fig. 1-11).

The dorsum of the front part of the body is black. This fades below and on the tail to a dull brown, with darker streaks in the corrugations.

The foot (spirit specimen) is 55 mm. in length and 15 mm. in breadth. The mantle is as described for *H. floweri*, except that the shell-lobes seem longer and slenderer than in the specimen figured by Godwin Austen.

The dart-sac is much contorted, about 95 mm. long, its lower 20 mm. thin-walled and filled with a caked secretion, its upper part with thick walls and a narrow lumen, in which lies a friable secretion. The male apparatus has the retractor muscle attached to a caecum with a single coil.

It is almost exactly like the specimen figured by Godwin Austen for *H. floweri*.

The female structures and the receptaculum seminis are also very similar, but in the present specimen the lower end of the vagina is distended by some 25 eggs, each about 2 mm. in diameter, whilst the common duct swelled up rapidly in water into a mucilaginous mass. No spermatophore was found.

The species is very near *H. floweri*. *Floweri* so far as I know is found only in the Larut Hills, this species seems to be confined to the central mountain massif.

#### *Hemiplecta floweri* Smith.

1899 SMITH, Proc. Malac. Soc. London, Vol. 3, p. 284-285.

1900 GODWIN AUSTEN, Proc. Malac. Soc. London, Vol. 4, p. 31-33, pl. 4, fig. 1-11.

1932 LAIDLAW, Proc. Malac. Soc. London, Vol. 20, p. 87.

Maxwell's Hill, Perak

1 sp.

Larut Hills, Perak

1 sp.

*Hemiplecta cymatium* (Pfeiffer).

- 1856 PFEIFFER, Novit. Conch., Vol. 1, p. 58, pl. 17, fig. 1-2 (*Helix*).  
 1873 STOLICZKA, Journ. As. Soc. Bengal, Vol. 42, p. 11, pl. 1, fig. 1-3,  
 pl. 2, fig. 13-15 (*Rhysota*).  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 380 (*Oxytes*  
*cymatium*), p. 380-381, pl. 6, fig. 1 (*Oxytes sakaya*).  
 1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 302.  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1022  
 (*Nanina*).  
 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 334 (*Sakaya*).  
 1902 COLLINGE, Journ. of Malac., Vol. 9, p. 78 (*Rhysota*).  
 1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 209 (*Sakaya*).  
 1932 LAIDLAW, Proc. Malac. Soc. London, Vol. 20, p. 88-89.

(Locality uncertain) (det. F. F. Laidlaw)

3 sp.

*Hemiplecta humphreysiana* (Lea).

- 1840 LEA, Proc. Americ. Phil. Soc., Vol. 1, p. 175 (*Helix*).  
 1867 MARTENS, Ostas. Landschn., p. 233-235, pl. 10, fig. 3, 4, 6  
 (*Nanina*).  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 378  
 (*Humphreysi*).  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1020  
 (*Nanina*).  
 1902 COLLINGE, Journ. of Malac., Vol. 9, p. 78.  
 1932 LAIDLAW, Proc. Malac. Soc. London, Vol. 20, p. 87-88.

Mount Ophir, August 1905 (det. J. R. le B. Tomlin) 1 sp.

Two specimens of *Hemiplecta densa* from the Batu Caves (Bull. Raffles Mus., No. 7, 1932, p. 40) and two unidentified shells from Bukit Kutu, Selangor (Proc. Malac. Soc. London, Vol. 20, 1932, p. 89) were sent to me by Mr. F. F. Laidlaw with an accompanying note that the name *densa* was probably not correct and that both samples might belong to one and the same species, i.e. a form of *humphreysiana*.

This, is certainly a better classification than *densa*, but it is equally true, that the shells are a little different from the usual form of *humphreysiana* in the characters as mentioned by Mr. Laidlaw (l.c. p. 89). In my opinion only fresh material can clear up the situation.

*Hemiplecta malaouyi* (De Morgan).

- 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 374-375, pl. 6,  
 fig. 4 (*Xesta*).  
 1932 LAIDLAW, Proc. Malac. Soc. London, Vol. 20, p. 84-87.

Cameron Highlands (det. F. F. Laidlaw) 1 sp.  
 Larut Hills, Perak 2 sp.  
 Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet,  
 March 1935 6 sp.  
 Gunong Siku, Telom Valley, Pahang, 4,500 feet, March  
 1935 2 sp.

The specimen from the Cameron Highlands and one of the dry shells from Kuala Terla are uniform pale brownish-yellow, with a lighter zone along the periphery. The others are all darker in various shades of brown and olive, one of the spirit specimens from Kuala Terla being even very dark brownish-green, but for a small pale yellowish band along the suture and periphery, and a zone of similar colour encircling the umbilicus.

A description of the morphology of the exterior of the animal and of its genital structure were given by Laidlaw (l.c.). He also compared them with similar organs in the closely related *Hemiplecta floweri* Smith (after Godwin Austen, Proc. Malac. Soc. London, Vol. 4, 1900, p. 31-33, pl. 4, fig. 1-11) and although the conchological differences between the two species are obvious enough, he found the anatomical details to be only little divergent.

*Hemiplecta striata* (Gray).

- 1834 GRAY, Proc. Zool. Soc. London, p. 59 (*Nanina*).
- 1842 BENSON, Ann. Mag. Nat. Hist., Vol. 9, p. 486 (*Helix naninoides*).
- 1867 MARTENS, Ostas. Landschn., p. 228 (*Nanina*).
- 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1017 (*Nanina naninoides*).

Botanic Gardens, Singapore, September 1931, leg. B. Collier  
(in Zool. Museum, Amsterdam) 4 sp.

*Dyakia janus* (Beck).

- 1837 BECK, Index Moll., p. 5 [*Nanina (Ariophanta)*].
- 1842 PFEIFFER, Symbolæ, Part 2, p. 19 (*Helix*).
- 1867 MARTENS, Ostas. Landschn., p. 226, pl. 11, fig. 4 (*Nanina*) (the reference to Pfeiffer 1842 was erroneously included by Martens at p. 224 under *Nanina albersi*).
- 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), p. 1024 (*Nanina*).
- 1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 207 (*Ariophanta*).
- 1932 LAIDLAW, Proc. Malac. Soc. London, Vol. 20, p. 192-193.

Bukit Timah, Singapore Island, October 1933, leg. M. W. F.  
Tweedie (det. F. F. Laidlaw) 1 sp.

There is a lot of confusion concerning the nomenclature of this species. It is presumed to be *Helix Janus bifrons* of Chemnitz (Conch. Cab., Vol. 11, 1795, p. 307, fig. 3016, 3017), although the diagnosis and the figures are very unsatisfactory indeed.

Laidlaw (l.c.) gave a few notes on the synonym of *Dyakia janus* and I follow his opinion here. This seems to be a very reasonable conclusion. Going further into the matter would

involve a thorough revision of the genus *Dyakia* which is certainly not the aim of this paper and which can only be carried out by examining more species in large series and by comparing type specimens.

*Dyakia kintana* (De Morgan).

1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 381-382, pl. 6, fig. 2 (*Ariophanta*).

1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 334 (*Ariophanta*).

Gunong Pulai, Johore, 1920 (det. F. F. Laidlaw) 2 sp.

I had the pleasure of discussing the identity of this species and the preceding one with Mr. Laidlaw. I am now following his suggestion of referring the two shells from Gunong Pulai to *Dyakia kintana*. I can only wonder what value De Morgan attached to the special specific character of "la nature de la suture".

Further research will, perhaps, unite the Malayan species, or part of them with some Sumatran and Bornean ones into one "Rassenkreis", the specific limits not being clearly defined and species merging easily into each other. Our Museum, unfortunately, possesses only some odd shells of not even a dozen species of *Dyakia* and it would seem too hazardous to venture a revision on so insufficient material.

*Paraparmarion elongatus* Collinge.

1902 COLLINGE, Journ. of Malac., Vol. 9, p. 75-76, pl. 5, fig. 34-36.

Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet,  
March 1935 1 sp.

Telom Valley, near Gunong Siku, Pahang, 4,500 feet 2 sp.

*Cryptosemelus gracilis* Collinge.

1902 COLLINGE, Journ. of Malac., Vol. 9, p. 76, pl. 5, fig. 37-39.

Telom Valley, near Gunong Siku, Pahang, 4,500 feet,  
March 1935 3 sp.

*Parmarion malayanus* Collinge.

1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 206-207, pl. 11, fig. 3-4,  
pl. 12, fig. 11-13.

Cameron Highlands, 4,500 feet 2 sp.

Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet,  
March 1935 6 sp.

Telom Valley, near Gunong Siku, Pahang, 4,500 feet,  
March 1935 1 sp.

Gunong Brinchang, Pahang, 4,500-5,500 feet, March  
1935 6 sp.



*Chloritis breviseta* (Pfeiffer).

- 1862 PFEIFFER, Journ. de Conch., Vol. 10, p. 41, pl. 5, fig. 4, 5 (*Helix*).  
 1867 MARTENS, Ostas. Landschn., p. 76 (*Helix*).  
 1868 PFEIFFER, Mon. Helic. Viv., Vol. 5, p. 387; id. Vol. 7, 1876, p. 444 (*Helix*).  
 1879 CROSSE, Journ. de Conch., Vol. 27, p. 336 [*Helix* (*Planispira*)].  
 1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 386 (*Planispira*).  
 1887 MÖLLENDORFF, Journ. As. Soc. Bengal, Vol. 55, p. 303 (*Helix* (*Trachia*) *malayana*).  
 1888 TENISON WOODS, Proc. Linn. Soc. N.S.W. (2), Vol. 3, p. 1035 (*Helix* (*Trachia*) *malayana*).  
 1890 PILSBRY, Man. of Conch. (2), Vol. 6, p. 268, pl. 52, fig. 80, 81.  
 1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 335, pl. 30, fig. 6, 6-a (*malayana*).  
 1892 PILSBRY, Man. of Conch. (2), Vol. 8, p. 274, pl. 51, fig. 34, 35 (*malayana*).  
 1902 COLLINGE, Journ. of Malac., Vol. 9, p. 81 (*malayana*).  
 1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 139 (*malayana*).  
 1903 COLLINGE, Fasc. Mal. Zool., Part 2, p. 210 (*malayana*).

Larut Hills, Perak	1 sp.
Maxwell's Hill, Perak, 2,140 feet, April 19, 1904	1 sp.
Kuala Terla, Telom Valley, Pahang, 4,000-5,000 feet, March 1935	6 sp.
Telom Valley, near Gunong Siku, Pahang, 4,500 feet, March 1935	3 sp.
Gunong Brinchang, Pahang, 4,500-5,500 feet, March 1935	1 sp.

In my opinion there is no reason for separating the species *breviseta* and *malayana*, the descriptions, although not verbally identical, agreeing in almost every detail.

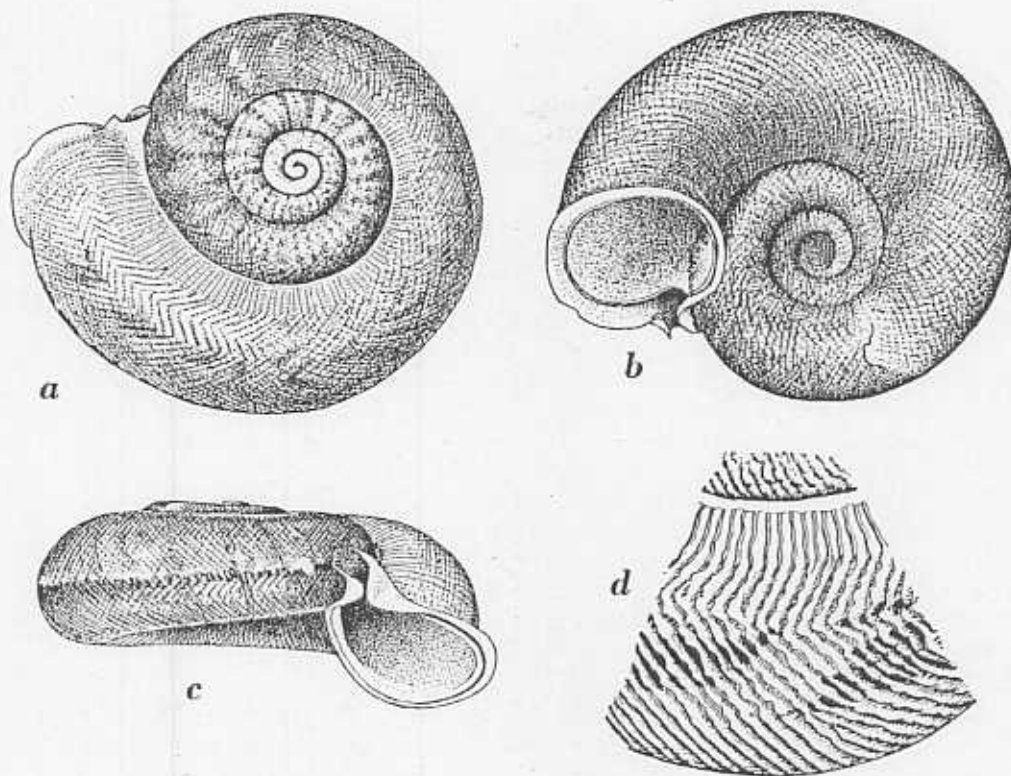
None of the earlier descriptions gives any information about the hairs, their form and their arrangement. In the material at my disposal I found a certain dissimilarity in the hair-cover, in some shells the hairs being widely, in others closely implanted. The coarse hairs stand at a distance of 0.3 mm., the fine ones at 0.1 mm., the hairs of the latter being also a little shorter.

This dissimilarity in hair cover involves a dissimilarity in outward appearance and texture of the whole shell, the finely haired specimens being more "velvety". As there is no other feature separating the two forms it seems not necessary to bring them under two species.

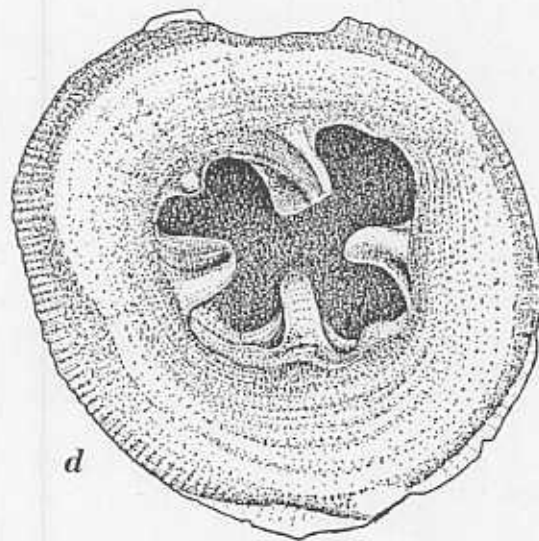
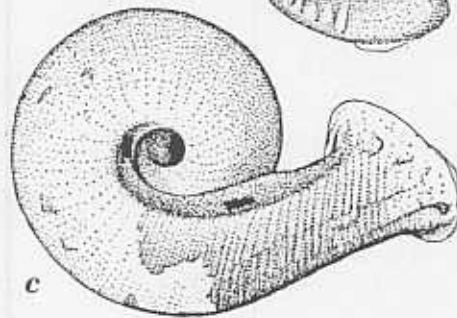
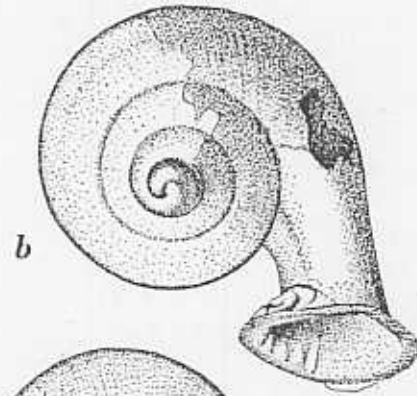
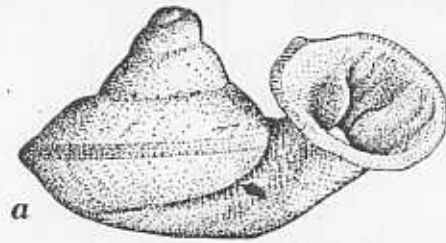
*Amphidromus perakensis* Fulton.

- 1901 FULTON, Journ. of Malac., Vol. 8, p. 104, pl. 9, fig. 8-10.  
 1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 161.  
 Gapis, Perak (det. F. F. Laidlaw) 2 sp.  
 Kuala Terla, Telom Valley, Pahang, March 10, 1935 2 sp.

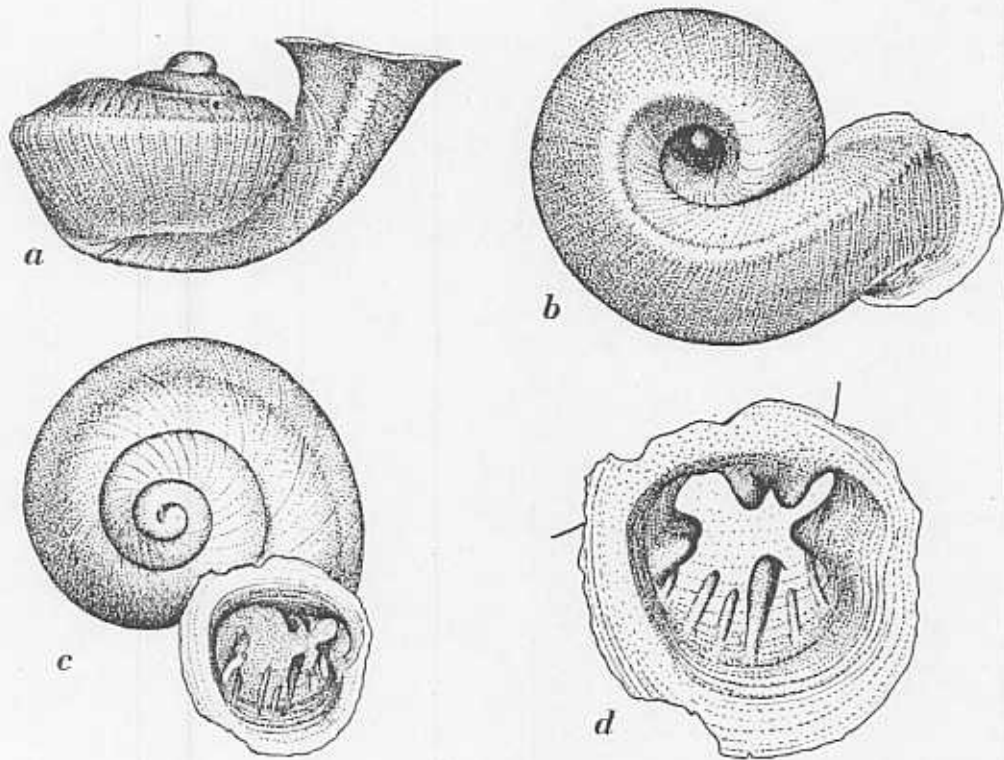




*Cyclotus umbraticus.*



*Hypselostoma piconis.*



*Gyltistrachela depressispira.*

All the shells bear the peculiar flat plate projecting from the columellar side into the interior of the shell, which is so characteristic of this species.

In Man. of Conch. (2), Vol. 13, 1900, p. 164 I find a similar structure mentioned for *Amphidromus aureus* var. *leucoxantha* (Martens) from Malacca. Hence either these shells should have been referred to *A. perakensis*, or all that stand as *A. perakensis* ought to be removed to *A. aureus* var. *leucoxantha*, unless we assume that the feature can have developed as a parallel phenomenon in the two species. The two shells of *Amphidromus aureus* var. *leucoxantha* from Khao Sabap, Siam, June 1935 in our Museum, do not show the slightest trace of this columellar plate.

*Corbicula malaccana* Deshayes.

- 1854 DESHAYES, Proc. Zool. Soc. London, p. 343.  
1885 DE MORGAN, Bull. Soc. Zool. France, Vol. 10, p. 424.  
1891 MÖLLENDORFF, Proc. Zool. Soc. London, p. 348.  
1902 MÖLLENDORFF, Nachr. Blatt, Vol. 34, p. 162.

Perak River, near Kota Tampan

2½ sp.

*Pseudodon callifer* (Martens).

- 1860 MARTENS, Proc. Zool. Soc. London, p. 15 (*Anodonta*).

Perak

1 sp.

The specimen is 43 mm. long, 28 high and 18 broad. In general form it agrees perfectly well with the figure of *P. harmandi* Crosse & Fischer (Journ. de Conch., Vol. 24, 1876, p. 331, pl. 10, fig. 2). On Dr. Haas' authority I follow him in uniting *P. harmandi* and *P. callifer* (Abh. Senckenb. naturf. Ges., Vol. 38, 1923, p. 138).

*Contradens ascia ascia* (Hanley).

- 1856 HANLEY, Catal. Rec. Biv. Shells, p. 385, pl. 23, fig. 20 (*Unio ascia*).  
1902 SYKES, Journ. of Malac., Vol. 9, p. 62 (*Unio ascia*).

River Kuantan, Pahang (in coll. Laidlaw)

1 sp.

The specimen is 35 mm. long, 24 high and 16 broad. It bears some resemblance to *C. ascia dimotus* (Lea), the Sumatran race, especially to the form described as *C. hageni* Strubell.

Another shell of the same species was found in Gua Bintong, N. of Kedah and a single valve in caves, Gunong Pondok, Perak. As to the last sample, a left valve 54 mm. long, 31 high and 12½ in diameter, Dr. Haas, to whom I sent the specimen for examination, wrote to me: "it must belong to the same species, but it is the largest and thickest specimen I have ever seen".

# APPENDIX

In the following lines there are given a few identifications of some shells found in caves in Malaya, during excavations for prehistoric and archaeological investigations, carried out by Mr. I. H. N. Evans and Mr. H. D. Collings.

Caves, Gunong Pondok, Perak, leg. I H. N. Evans.

*Thiara variabilis* (Benson).

2 sp.

*Pseudodon vondembuschianus chaperi* (De Morgan).

1 left valve, damaged.

*Polymesoda* sp.

1 right valve, damaged.

*Contradens ascia ascia* (Hanley).

1 left valve 54 mm. long,

31 high, 12½ in diameter.

Gua Bintong, Perlis, leg. H. D. Collings.

*Mytilus viridis* Linné. 1 left and 1 right valve, both damaged.

*Pseudodon vondembuschianus chaperi* (De Morgan).

1 sp., 1 right and 1 left valve.

*Contradens ascia ascia* (Hanley).

1 sp. (left valve broken).

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EXPLANATION OF PLATES

- PLATE 1. *Cyclotus umbraticus* n.sp. Type. Maxwell's Hill, Perak. *a*, top view; *b*, base view; *c*, side view; *d*, detail of sculpture.  $a-c \times 2$ ;  $d \times 4\frac{1}{2}$ .
- PLATE 2. *Hypselostoma piconis* n.sp. Type. Sungei Siput, Perak. *a*, side view; *b*, top view; *c*, base view; *d*, interior of aperture.  $a-c \times 17$ ;  $d \times 50$ .
- PLATE 3. *Gyliotrachela depressispira* n.sp. Type. Bukit Chintamani, Pahang. *a*, side view; *b*, base view; *c*, top view; *d*, interior of aperture.  $a-c \times 17$ ;  $d \times 30$ .